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| **“The value of biodiversity is the sum of all of its parts”** | | | |
| NAMES: | | | |
| UNIT: Plants, Anatomy, Growth, and Function  TITLE OF LESSON : Biodiversity (Succession) | | | |
| **BIG IDEAS**:  Plant variety is critical to the survival and sustainability of ecosystems. | | **MATERIALS**:  -chart paper  -different coloured markers  -jenga blocks  -masking tape | |
| **MINISTRY EXPECTATIONS**:  A1.11 communicate ideas, plans, procedures,  results, and conclusions orally, in writing, and/or  in electronic presentations, using appropriate  language and a variety of formats (e.g., data  tables, laboratory reports, presentations, debates,  simulations, models)  A2.1 identify and describe a variety of careers  related to the fields of science under study  (e.g., zoologist, botanist, geneticist, ecologist,  pharmacologist, farmer, forester, horticulturalist)  and the education and training necessary for  these careers  F3.4 describe the various factors that affect plant  growth (e.g., growth regulators, sunlight, water,  nutrients, acidity, tropism)  F3.5 explain the process of ecological succession,  including the role of plants in maintaining  biodiversity and the survival of organisms after  a disturbance to an ecosystem | |
| **STUDENT LEARNING GOALS**:  -understand succession’s role in promoting biodiversity  -develop an appreciation for the importance of biodiversity  -identify factors that decrease biodiversity  -identify ways which our society can help promote and maintain biodiversity | | APPENDICES  Appendix A1: teacher notes on how to run the jenga ecosystem activity  Appendix B1: teachers notes to how to run activity  Appendix C1: handout given to each group for the infomercial  Appendix C2: “ticket out of class” handout given to each group | |
| PRIOR KNOWLEDGE:  -the stages of succession  -colonisers, pioneer species herbaceous species, and complex plants  -ecosystems  -factors that affect plant growth | |
|  | T/L STRATEGIES | RATIONALE | ASSESSMENT |
| A MINDS ON  10- 15 minutes | The building of a Jenga ecosystem using succession  **Appendix A1** | -reviews terms used in the previous lesson on succession  -links succession to biodiversity | -Apply understanding of terms by coming up with plant examples  -thumbs up/down class vote to the “Assessment for learning” question |
| Action  10-15 minutes | Toppling biodiversity and the Jenga ecosystem  **Appendix B1** | -illustrate how biodiversity affects the ecosystem  -identifies factors that reduce biodiversity | -Questioning  -allow students to discuss and communicate |
| C CONSOLID-ATION &  CONNEC-TION  30-35 minutes | Infomercial that promotes diversity  **Appendix C1** | -Allows students to further explore how certain factors impact biodiversity  -challenge students to come up with real life solutions to how they can facilitate increasing biodiversity | -students will present their opinions and responses to biodiversity in the form of a 1-2 minute docudrama |
| NEXT STEPS  5 minutes | Ticket out of class: biodiversity raters  -students will remain in their infomercial group and will complete a group ticket  **Appendix C2** | -assess student’s understanding of biodiversity  -allows them to practice their ability to assess biodiversity | -allows students to discuss and debate with their peers on biodiversity |

**Appendix A1**: teacher notes on how to facilitate the building of the Jenga ecosystem

Setup:

* Place masking tape on the ends of each Jenga block. Hand one Jenga block to each student.

Facilitating the activity:

* The teacher is going to aid the class in building an ecosystem out of Jenga blocks. The class will verbally outline the stages of primary succession together.
* As they identify the stages of succession, the teacher will assign each student to come up with an example of a species of plant that fits in the specific succession stage.
* The student will then write their specific example on the masking tape (on the ends of the Jenga block).
* When the review of succession reaches climax, students will then start coming up with examples of species that would live in that ecosystem.
* The Jenga block tower (ecosystem) will then be assembled starting with the early stages of progression placed at the base of the tower.

Assessment as learning question: Does succession aid in increasing or decreasing the number of species?

Teacher response: Yes, the more number of species that are present in an ecosystem, the more biodiversity is present.

**Appendix B1**: toppling biodiversity and the Jenga ecosystem

* Class will collectively brain storm factors which may eliminate biodiversity
  + They will also state which species will be specifically affected in the Jenga ecosystem
* One student will be selected to write down each factor on the chalk board
* As each factor and effect is stated, the teacher will knock out the Jenga blocks from the Jenga ecosystem without returning them to the tower
* The less species that are present in the ecosystem, the more likely the ecosystem will collapse and be destroyed

**Appendix C1**: Student handout

Infomercial instructions

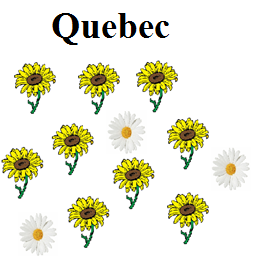
Each group (3-4 members) will be formed based off a shared category from the minds-on Jenga activity (for example: colonizers are placed together). They will need to construct and present a (1-2 minute) infomercial. The following must be included in the presentation:

1. Choose 1 factor (on the board) that decreases biodiversity to be the topic of your informercial
2. Choose an ecosystem which that factor will effect
3. Choose a target audience you want to engage/ what channel will your infomercial air on?
4. Present the effects your chosen topic has on biodiversity
5. Present what you want your audience to do to prevent the loss of biodiversity

Note: Each member must have a role in the infomercial

**Appendix C2: group ticket out of class**

Each group has been hired to become judges for a prestigious gardening competition. The judges will have to discuss as a group which garden has the least biodiversity and which garden has the most biodiversity. Your final decision will be submitted at the end of class

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**Judges final decision:**

Garden(s) with the least biodiversity is/are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Garden(s) with the most biodiversity is/are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_